CLAIMS

1. A light-emitting device comprising:

a light-emitting element in which a light-emitting material is sandwiched between a pair of electrodes; and

a thin film transistor including, from a substrate side, a lamination of:

a gate electrode formed by fusing conductive nanoparticles;

a gate insulating layer formed in contact with the gate electrode, at least containing a layer comprising a silicon nitride or a silicon nitride oxide layer and a silicon oxide layer; and

a semiconductor layer,

wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided.

2. A light-emitting device comprising:

a light-emitting element in which a light-emitting material is sandwiched between a pair of electrodes; and

a thin film transistor including, from a substrate side, a lamination of:

a gate electrode formed by fusing conductive nanoparticles;

a gate insulating layer formed in contact with the gate electrode, at least containing a layer comprising a silicon nitride or a silicon nitride oxide layer and a silicon oxide layer;

a semiconductor layer;

wirings connected to a source and a drain and formed by fusing conductive nanoparticles; and

a silicon nitride layer or silicon nitride oxide layer formed by being in contact with the wirings,

wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided.

3. A light-emitting device comprising:

a light-emitting element in which a light-emitting material is sandwiched between a pair of electrodes;

a first thin film transistor including, from a substrate side, a lamination of:

a gate electrode formed by fusing conductive nanoparticles;

a gate insulating layer formed in contact with the gate electrode, at least containing a layer comprising a silicon nitride or a silicon nitride oxide layer and a silicon oxide layer; and

a semiconductor layer;

a driver circuit including a second thin film transistor formed by having the same layer structure as that of the first thin film transistor; and

a wiring extended from the driver circuit and connecting to the gate electrode of the first thin film transistor,

wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided.

4. A light-emitting device comprising:

a light-emitting element in which a light-emitting material is sandwiched between a pair of electrodes;

a first thin film transistor including, from a substrate side, a lamination of:

a gate electrode formed by fusing conductive nanoparticles;

a gate insulating layer formed in contact with the gate electrode, at least containing a layer comprising a silicon nitride or a silicon nitride oxide layer and a silicon oxide layer;

a semiconductor layer;

wirings connected to a source and a drain and formed by fusing conductive nanoparticles; and

a silicon nitride layer or silicon nitride oxide layer formed to be in contact with the wirings;

a driver circuit including a second thin film transistor formed by having the same

layer structure as that of the first thin film transistor; and

a wiring extended from the driver circuit and connecting to the gate electrode of the first thin film transistor,

wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided.

5. The light-emitting device according to any one of claims 1 to 4, wherein the conductive nanoparticles comprise silver.

6. The light-emitting device according to claim 2 or 4, wherein the semiconductor layer contains hydrogen and halogen and is a semi-amorphous semiconductor having a crystal structure.

7. The light-emitting device according to claim 2 or 4, wherein the driver circuit is composed only of an n-channel type thin film transistor.

8. The light-emitting device according to any one of claims 1 to 4, wherein the thin film transistor includes the semiconductor layer containing hydrogen and halogen and which is a semiconductor having a crystal structure, wherein the thin film transistor is capable of being operated in electric field effect mobility of from 1 $cm^2/V \cdot sec$ to 15 $cm^2/V \cdot sec$ cm^2.

9. The television receiver according to any one of claims 1 to 4, wherein the light-emitting device includes a display screen.

10. A method for manufacturing a light-emitting device comprising the steps of:

forming a gate electrode over a substrate having an insulating surface with a droplet discharge method;

laminating a gate insulating layer, a semiconductor layer, and an insulating layer over the gate electrode;

forming a first mask in a position overlapping with the gate electrode with a droplet discharge method;

forming a channel protective layer by etching the insulating layer by the first mask;

forming a semiconductor layer containing one conductivity type impurity;

forming a second mask in a region including the gate electrode with a droplet discharge method;

etching the semiconductor layer containing one conductivity type impurity and the semiconductor layer;

forming wirings to be connected to a source and a drain with a droplet discharge method; and

etching the semiconductor layer containing one conductivity type impurity on the channel protective layer by using the wirings to be connected to the source and the drain as masks.

11. A method for manufacturing a light-emitting device comprising the steps of:

forming a gate electrode and a connection wiring over a substrate having an insulating surface with a droplet discharge method;

laminating a gate insulating layer, a semiconductor layer, and an insulating layer over the gate electrode;

forming a first mask in a position overlapping with the gate electrode with a droplet discharge method;

forming a channel protective layer by etching the insulating layer by the first mask;

forming a semiconductor layer containing one conductivity type impurity;

forming a second mask in a region including the gate electrode with a droplet discharge method;

etching the semiconductor layer containing one conductivity type impurity and the semiconductor layer;

partially exposing the connection wiring by selectively etching the gate insulating

layer;

forming wirings to be connected to a source and a drain and connecting at least one of the wirings to the connection wiring; and

etching the semiconductor layer containing one conductivity type impurity on the channel protective layer by using the wirings to be connected to the source and the drain as masks.

12. The method for manufacturing a light-emitting device according to claim 10 or 11, wherein the step of laminating a gate insulating layer, a semiconductor layer, and an insulating layer over the gate electrode is carried out without exposing to the atmosphere.

13. The method for manufacturing a light-emitting device according to claim 10 or 11, wherein the gate insulating film is sequentially laminated by a first silicon nitride film, a silicon oxide film, and a second silicon nitride film.